

WHAT IS CLAIMED IS:

1. An ultrasonic vibration apparatus comprising:
a casing having a vibration surface;
a piezoelectric element mounted in said casing; and
a disk-like vibration plate supported at a position
along a circle defining two regions, an inner region thereof
and an outer region thereof,

wherein said disk-like vibration plate is constructed
so as to be a part of said casing serving as said vibration
surface; and

said piezoelectric element is provided in the central
part of said disk-like vibration plate, thereby causing said
inner region and said outer region to vibrate in
substantially the same phase.

2. An ultrasonic vibration apparatus according to
Claim 1, wherein said casing is constructed having a
cylindrical shape with at least one end thereof closed and a
groove is provided in an outer peripheral surface in
proximity to the closed end of said casing thereby
constituting said disk-like vibration plate.

3. An ultrasonic vibration apparatus according to one
of Claims 1 and 2, wherein a flexible filler whose hardness

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~~is lower~~ than that of said casing is filled in said groove.

4. An ultrasonic vibration apparatus according to one of Claims 1 to 3, wherein said ultrasonic vibration apparatus is used for an ultrasonic sensor.

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~~Adda~~

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